

FIG. 1



Single Layer of Clear Lens
Monomer Mix

(A5)



Single or Multiple Layer
of Color Ink

(A6)

Single Laminate



← Color Ink Layer (Single or Multiple)

(A8) or (A10)

← Polymer Surface (Primary or Secondary)
(A7) or (A9)

Sandwich Laminate

Color
Layer →



← Polymer Surface

← Polymer Surface

(A8) or (A10)

(A7) or (A9)

(A7) or (A9)

FIG. 2

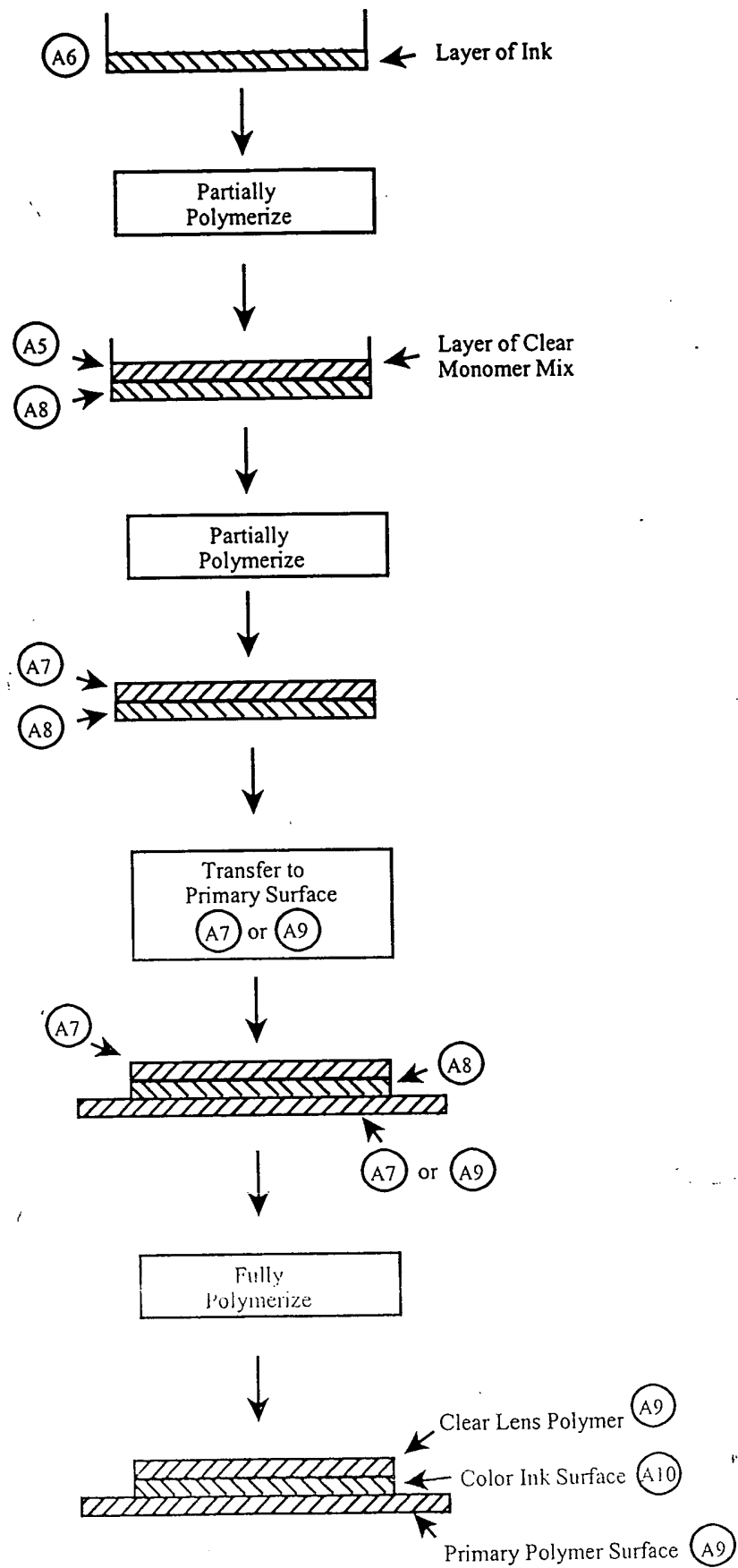


FIG. 3A

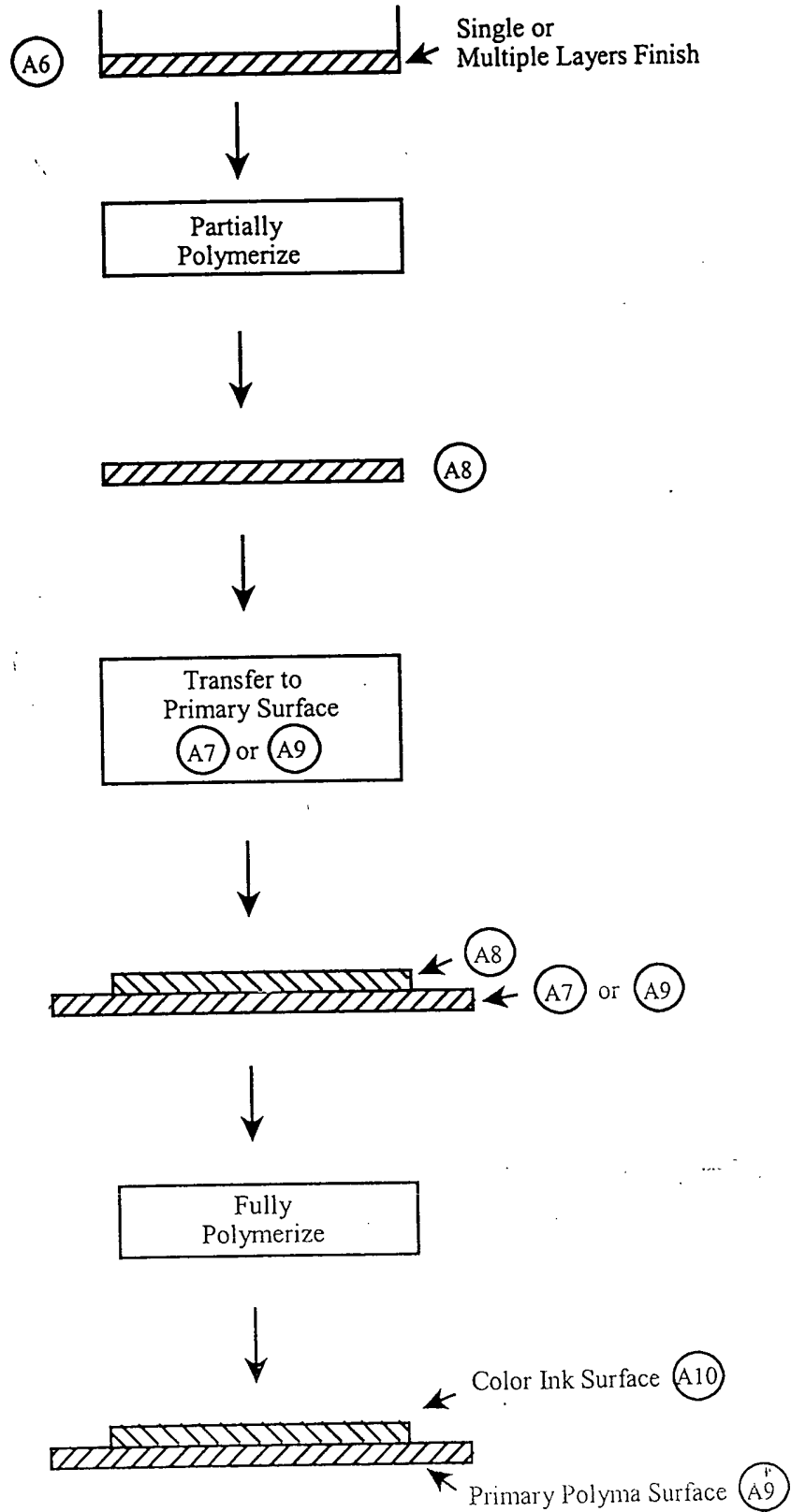


FIG. 3B

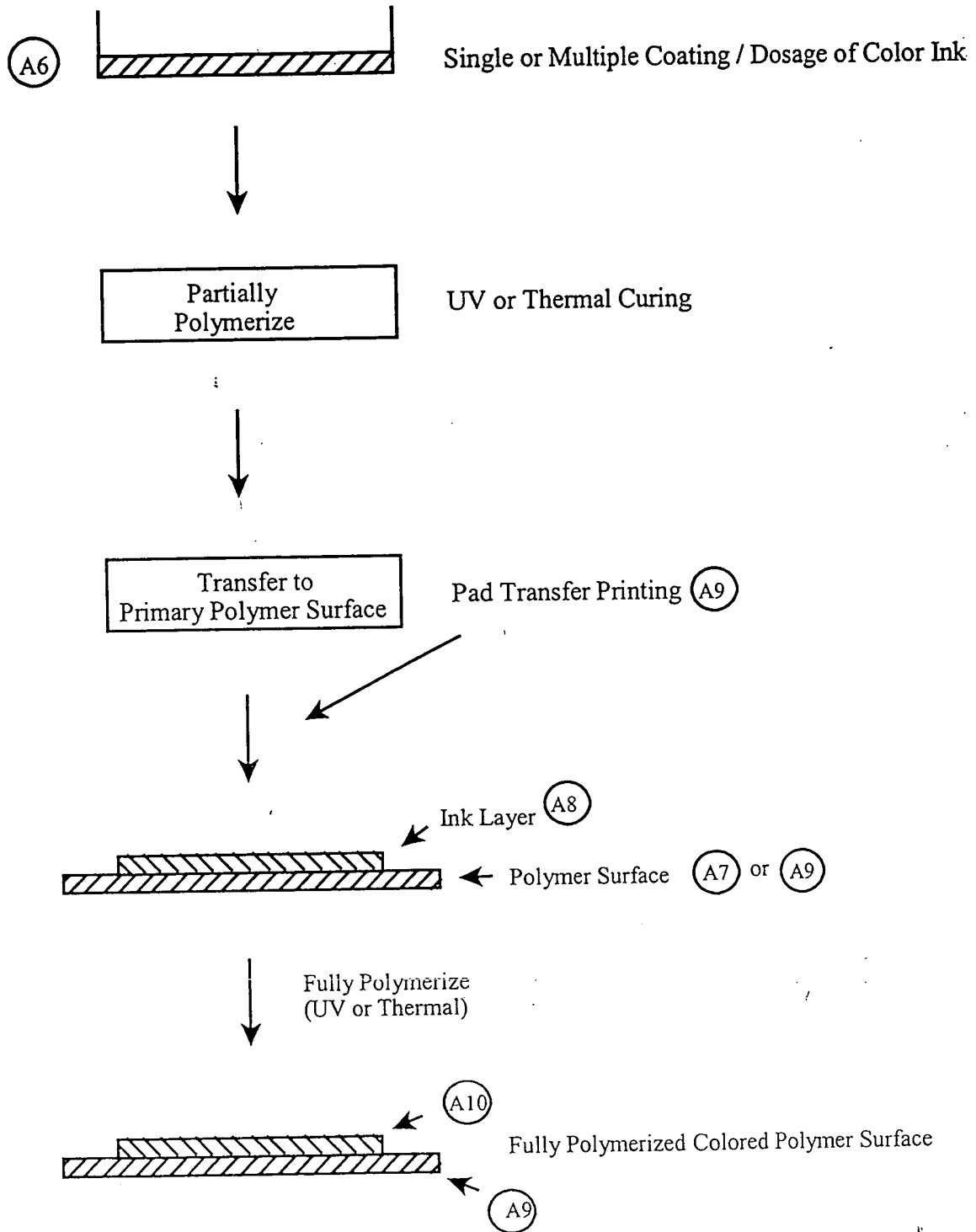








FIG. 4

Lathe/Fabrication

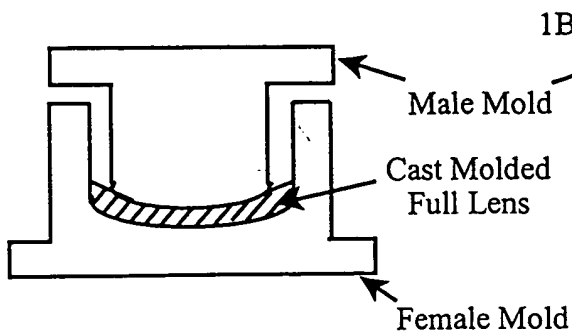
- 1  A contact lens (partially or fully polymerized polymer) with completed front curve and back curve.
- 2A  Removal of lens portion, to be printed with digital ink, by cutting, laser removal, grinding.
- or
- 2B  The digital image is formed on top of lens surface 1.
- 3A  Digitally print in the area of "removed" lens portion and filled to the top.
- or
- 3B  Digitally print in the area of "removed" lens portion but filled only partially.
- 4A Fully polymerize 3A or 2B.
- 4B or partially polymerize 3B.
- 5B  Provide a clean monomer layer on the top of the partially filled and partially polymerized digital image area to get laminated image.
- 6B Fully polymerize 5B.
7. Take 4A or 6B and carry out process steps like polishing, hydration as required to produce soft or hard lens.

NOTE: Step 2 can be carried out on front surface or back surface. When back surface is removed the process that provided sandwich 'laminated' structure is preferred, for comfort purpose.

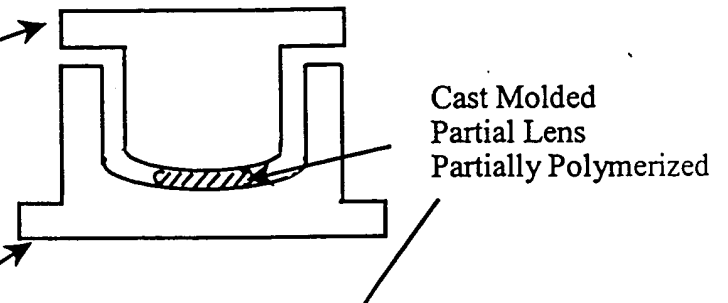
FIG. 5

Cast Molded Lens

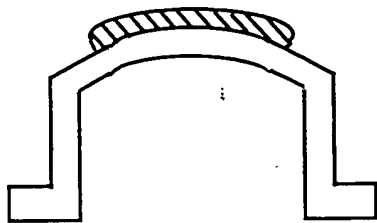
1A



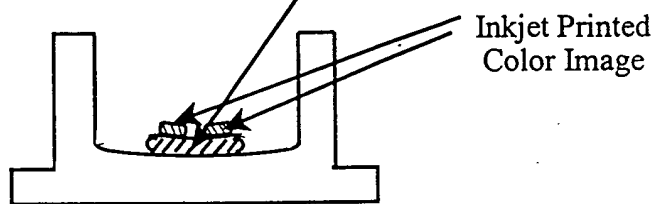
1B



2A



Cast Molded Clear Lens
(Partially or Fully Polymerized)

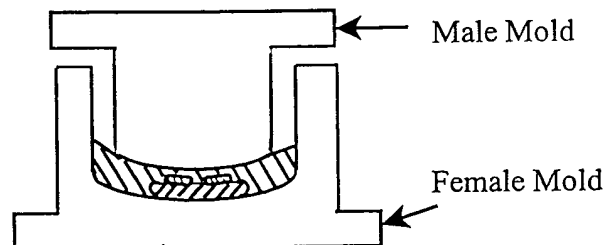


- a. Inkjet print or Pad Transfer print digitized color image
- b. Partially polymerize lens and color image

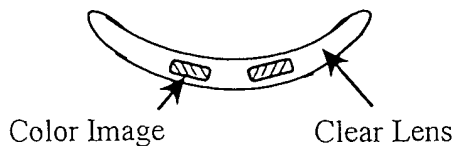
3A

Follow 3A to 7 process steps as described for fabrication process

3B



- a. Fill cast mold system with additional monomer to prepare a full lens
- b. Fully polymerized lens



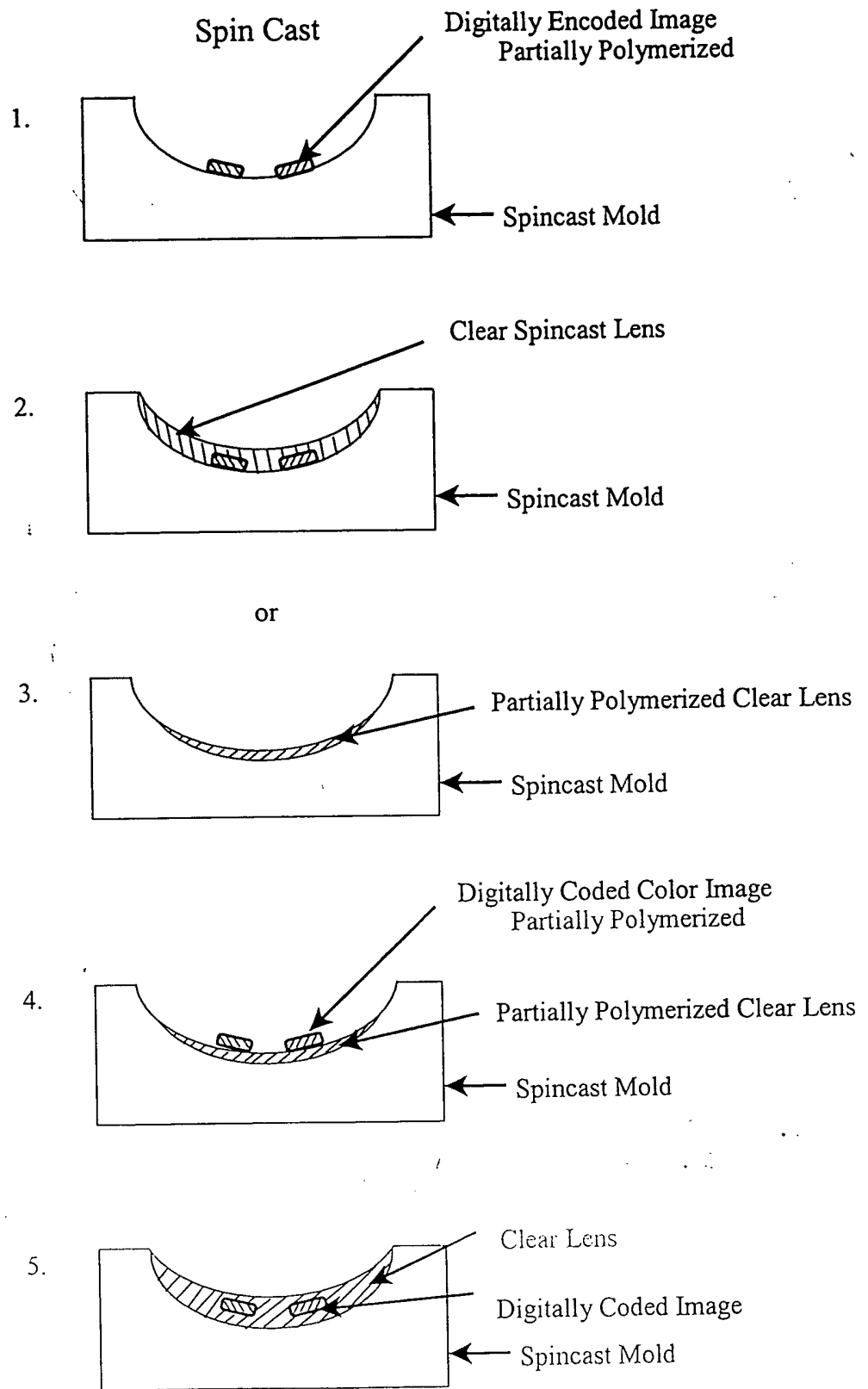
4B

Remove male/female mold giving a cast molded with 'laminated' digitized color image

5B

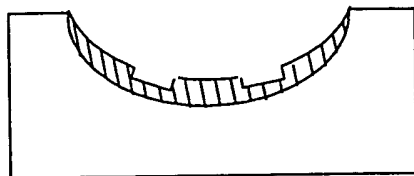
Follow edging, polishing hydration process, as necessary, to produce a soft or hard contact lens

FIG. 6

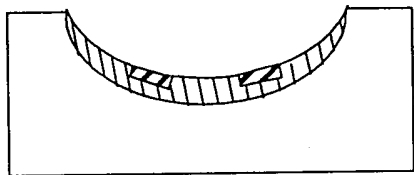


6. Follow conventional lens finishing process.

FIG. 7A



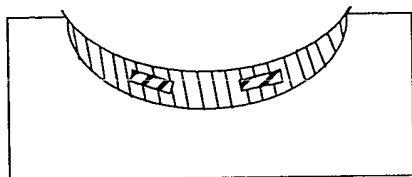
Removal of Lens Portion to be Printed
with Ink by Cutting, Laser, etc.



Digitally Print in the Area of the
Removed Lens Portion and Fill to the
Top or Partially



Partially Polymerize



Provide a Clear Monomer Mix;
or Partially or Fully Polymerized Digital Image;
to be fully polymerized

FIG. 7B



FIG. 8A



FIG. 8B

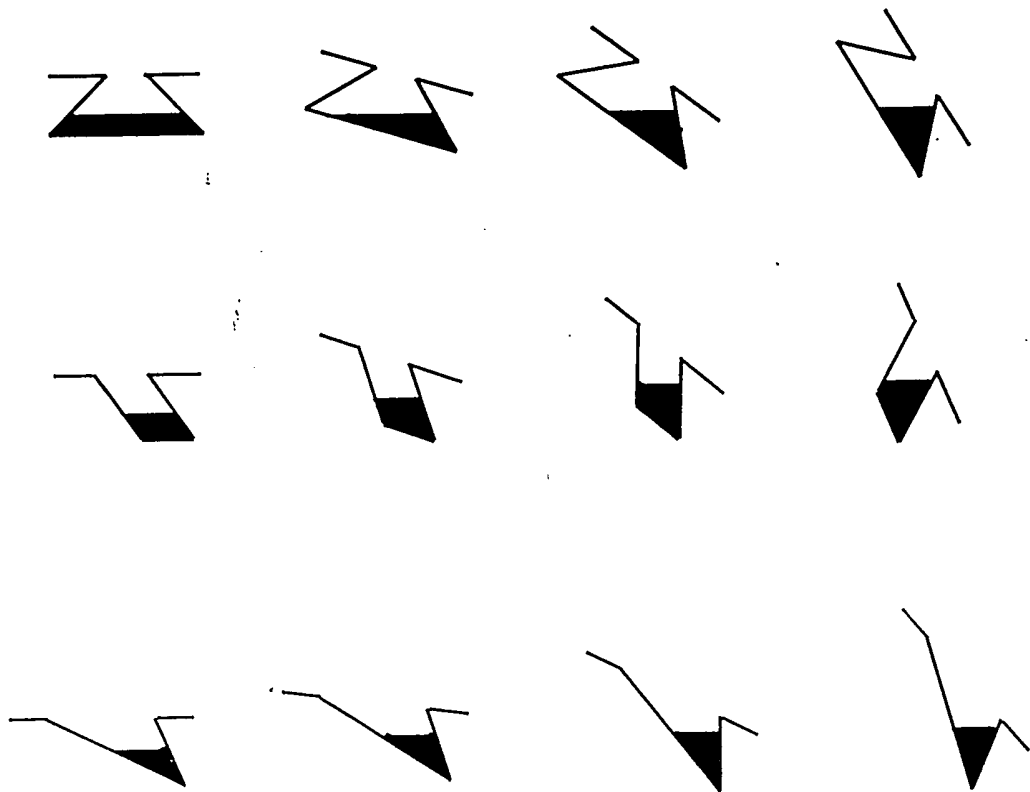


FIG. 9

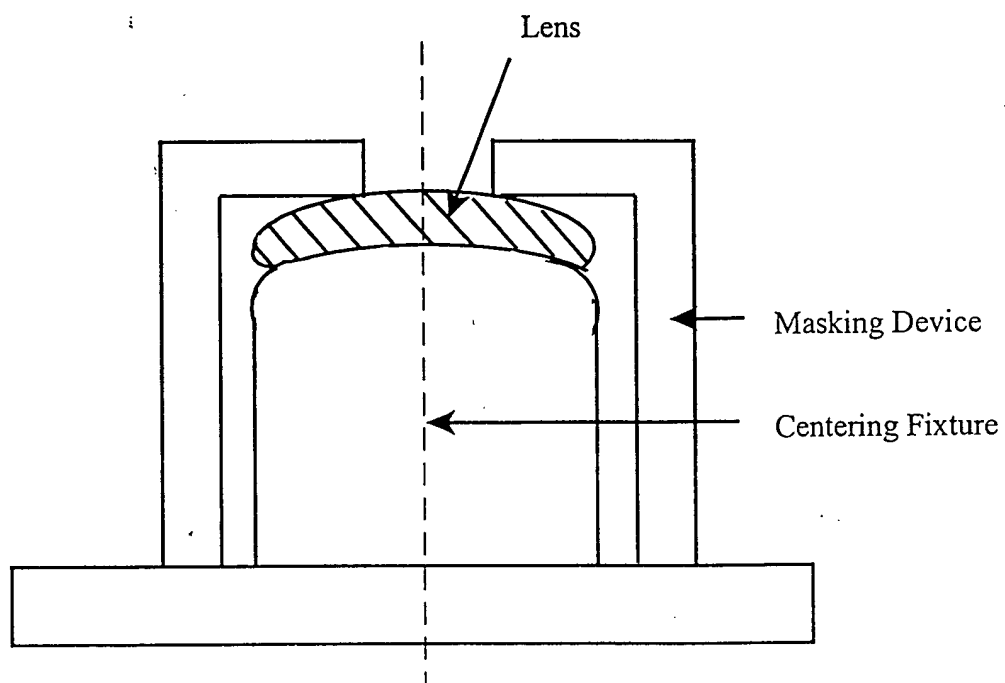


FIG. 10

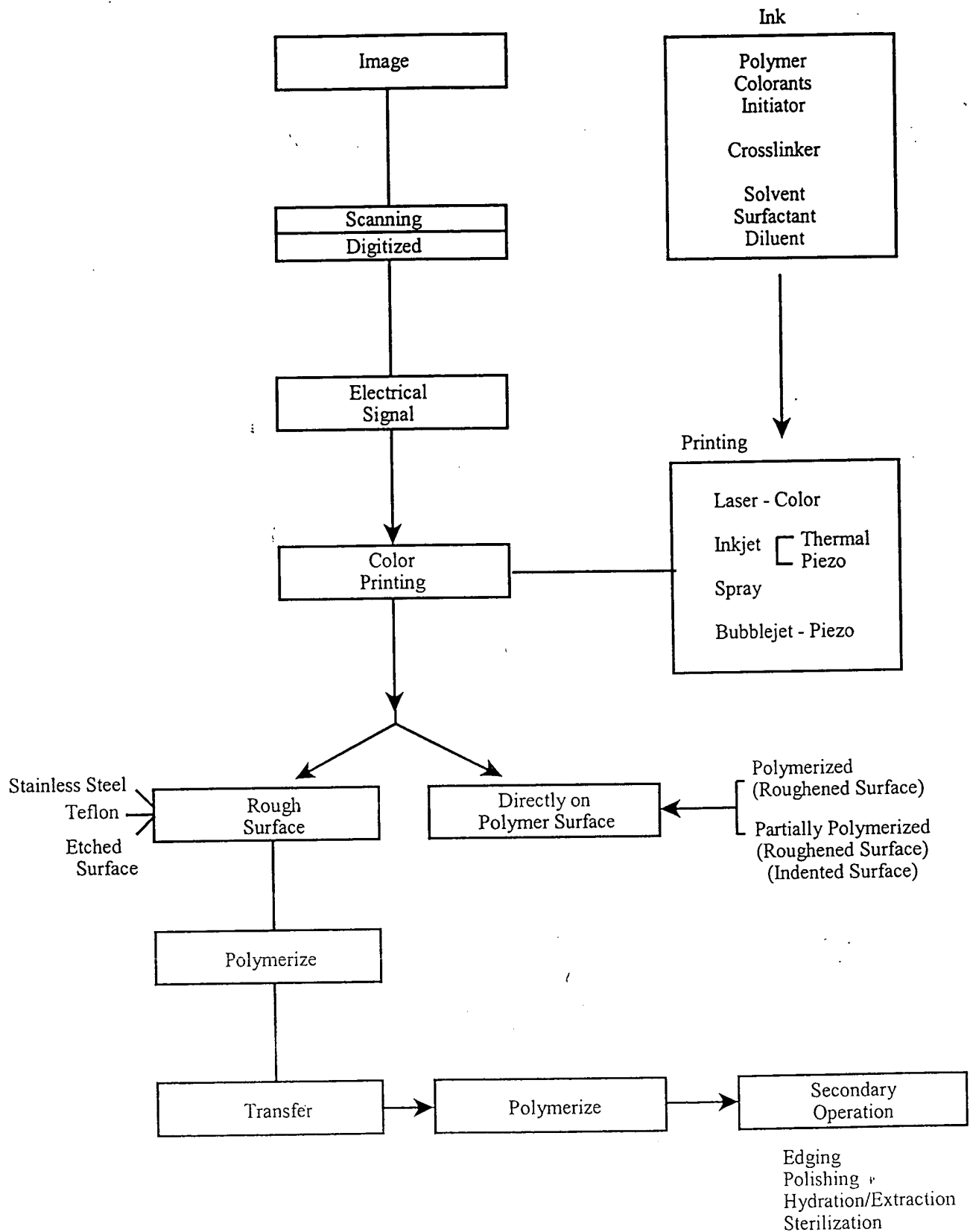


FIG. 11

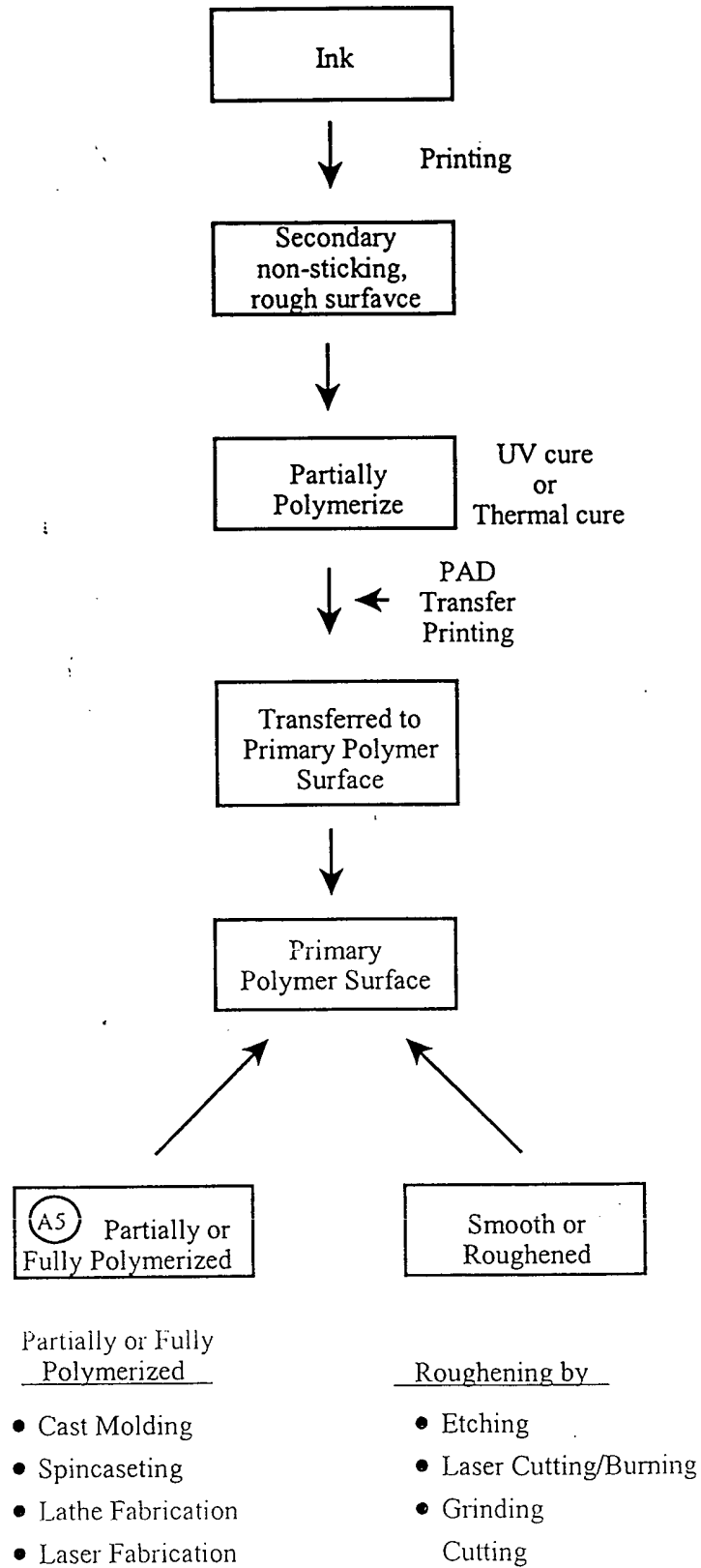


FIG. 12

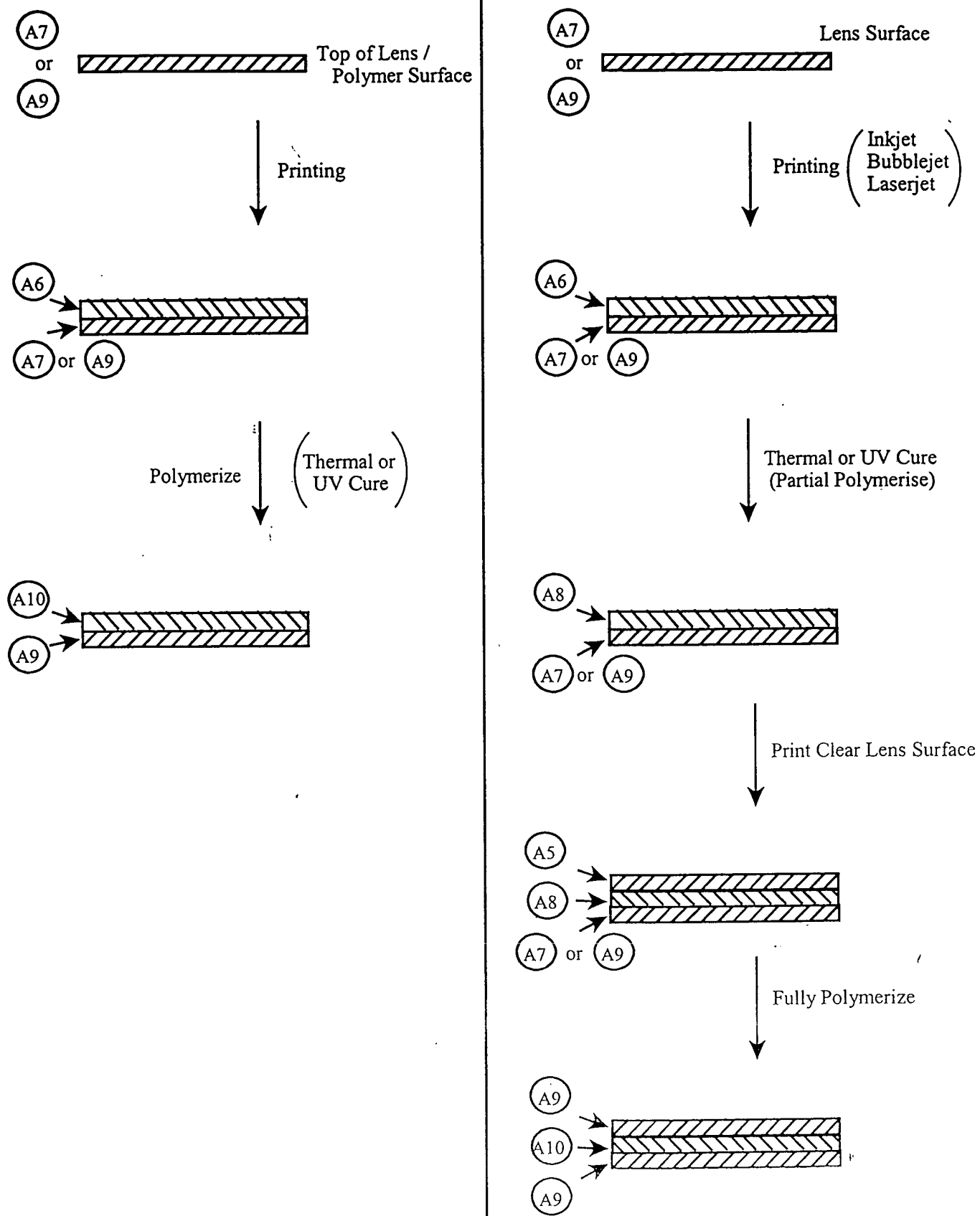


FIG. 13

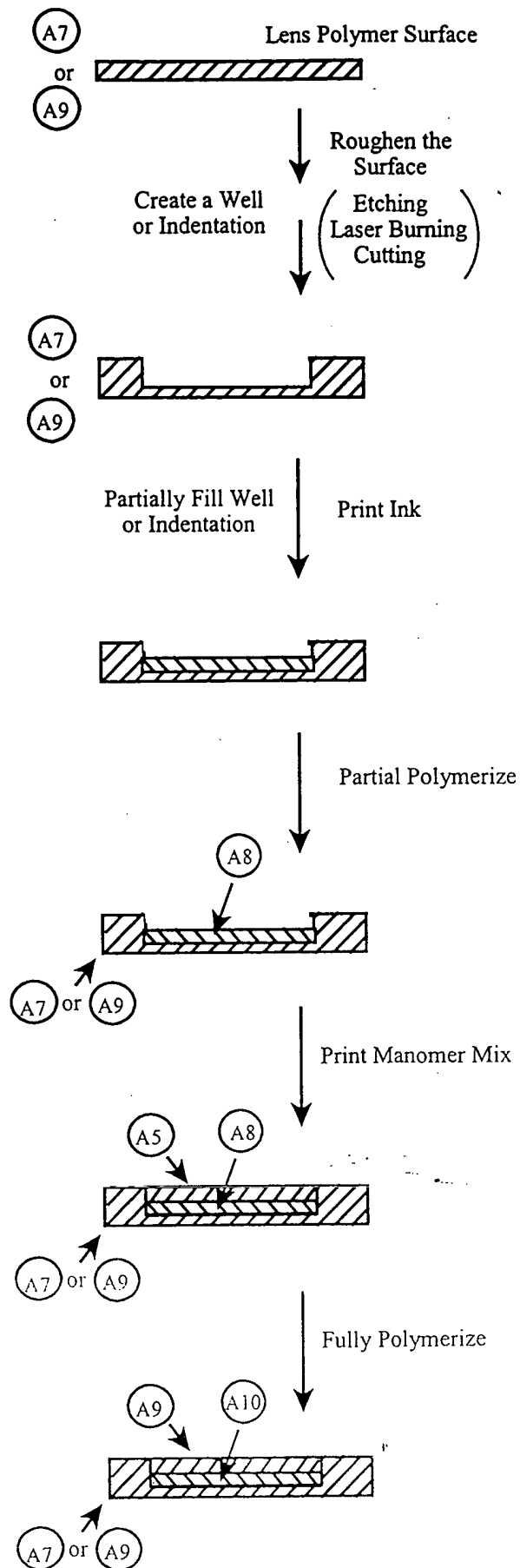
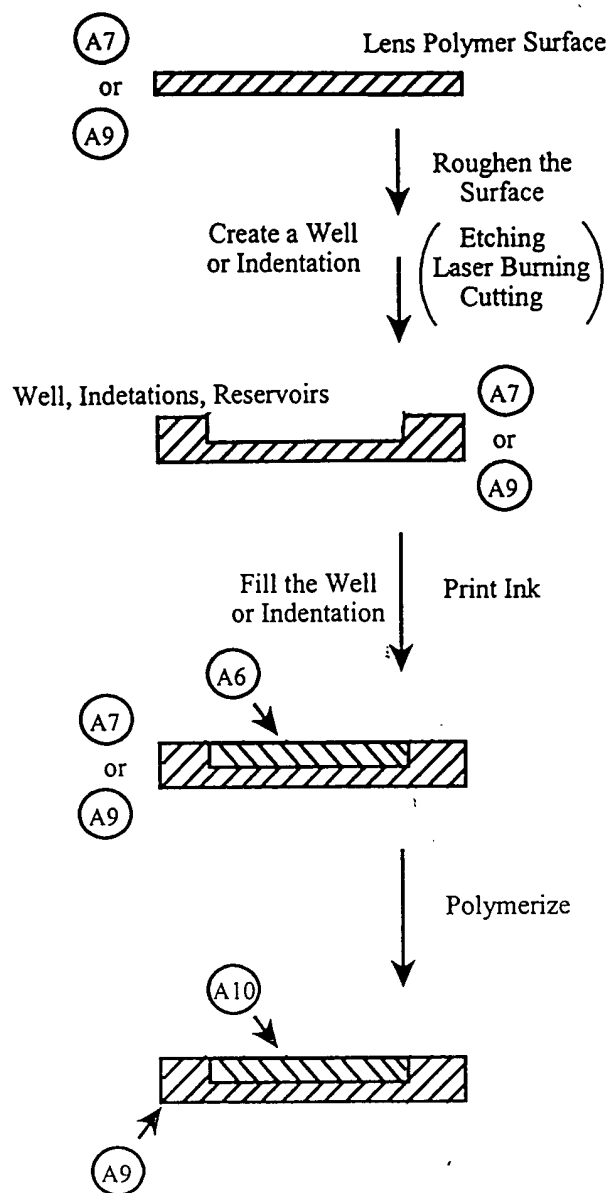


FIG. 14